

Remarks

Claims 1-6 and 8-13 are pending in the application. No amendments have been made to the claims.

The claims were rejected under 35 USC §103(a) as unpatentable over Montgomery ('908) or Bockhorst *et al.* in combination with Grossman and Close *et al.* or Lincklaen-Arriens *et al.* It is submitted that the Examiner's reasoning in maintaining the rejection of claim 1 as being obvious in view of Montgomery ('908) or Bockhorst *et al.* when taken with Grossman and Close *et al.* or Lincklaen-Arriens *et al.* is erroneous.

As has previously been argued, obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention **where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art.**

Montgomery ('908) and Bockhorst *et al.* both teach the use of sonic signals for data transmission along a drill string. In each case the intention of the systems disclosed is to transmit data over significant distances in real time, typically from a downhole location to the surface. Grossman discloses a system whereby data is recorded and stored at a downhole location by a logging device and subsequently retrieved by lowering an "overshot" device into close proximity with the logging device.

The systems disclosed by Montgomery ('908) and Bockhorst *et al.*, on the one hand, and Grossman on the other hand are, essentially, alternative solutions to similar problems. Montgomery ('908) and Bockhorst *et al.* seek to provide continuous real time transmission of data from a downhole location to the surface. Grossman does not attempt to provide real time transmission, the data being retrieved periodically. As such, Montgomery ('908) and Bockhorst *et al.* teach a quite different approach to the problem of retrieving downhole data from Grossman.

The present invention is concerned with a different and quite specific problem: retrieving data that originates below a physical obstruction, such as a shut-in valve, in the drill string. The solution provided by the present invention utilizes sonic transmission through the drill string

over a short path from one side of the obstruction to the other, where the data is stored for subsequent retrieval.

While the use of sonic data transmission *per se* through a drill string is taught by Montgomery ('908) and Bockhorst *et al.*, the specific use of such data transmission defined in the present claim 1 is neither taught nor suggested by either reference. The combination of sonic data transmission as taught by Montgomery ('908) and Bockhorst *et al.* and data storage and retrieval as taught by Grossman is neither disclosed or suggested by any of the prior art of record. Indeed, in the absence of the teaching provided by the present application, no logical reason can be seen for combining these prior teachings.

The Examiner has argued that it is obvious to use sonic transmission over a short path length, because transmission over a short distance suffers less noise and provides greater signal amplitude and improved signal recognition. However, the Examiner has not indicated why the skilled person, in the absence of the teaching provided by the present application, would consider it useful or desirable to use sonic transmission over a short distance. Montgomery ('908) and Bockhorst *et al.* teach the use of sonic data transmission over substantial distances, *i.e.*, the length of a drill string, as a replacement for transmission methods such as mud pulse transmission and various types of electrical signal transmission, which is quite different from the use made of sonic transmission in the present case.

The Examiner further argues that the prior art shows the uphole recordation of received pressure data to be standard, and sonic signal transmission along the pipe to be standard, and concludes that the combination would have been obvious to the skilled person. It is submitted that the conclusion of this argument does not follow logically from its premise. To the extent that sonic signal transmission along a pipe can be said to be "standard," it is the use of such transmission over a long distance that is "standard." The use of sonic transmission through a short length of pipe is not disclosed or suggested anywhere in the prior art for any purpose.

The Examiner further argues that his conclusion of obviousness does not rely on knowledge gleaned from the applicant's disclosure, and that the skilled person faced with the problem of signal blockage due to shut-in valves would routinely consider employing sonic signal transmission "to form the bridge." However, the present application itself indicates that prior attempts to solve this problem focused on providing continuity of hydraulic or electrical paths past the obstruction. That is, it is submitted that the very idea of "forming a bridge" using

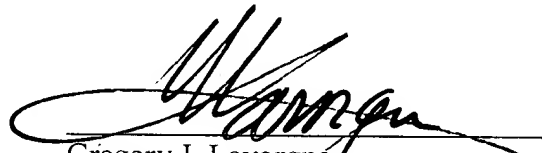
a different mode of data transmission is non-obvious in itself, in the light of the prior art, and that the selection of sonic data transmission through the drill string to form such a bridge is also non-obvious in the absence of any relevant teaching in the prior art. The Examiner's comment that it is "common knowledge that an obstructed drill string will severely attenuate acoustic signals travelling therein" supports this reasoning. In the light of such common knowledge, the skilled person would be disinclined to consider sonic transmission as providing a solution to the problem of transmitting data past an obstruction.

Moreover, neither Close *et al.* nor Lincklaen-Arriens *et al.* alter the way a person of ordinary skill will approach the problem. Reliance on those references does not establish a *prima facie* case of obviousness.

On the basis of the foregoing comments, it is submitted that claim 1 is clearly non-obvious in the light of the prior art.

It is respectfully submitted that all pending claims are in condition for allowance, and respectfully request that allowance be granted at the earliest date possible. Should the Examiner have any questions or comments regarding Applicant's amendments or response, the Examiner is asked to contact Applicant's undersigned representative.

Respectfully submitted,



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